

WHAT IS CLAIMED IS:

1. A semiconductor device comprising:

grooves formed on a main surface of a semiconductor substrate,

5       silicone oxide films embedded in insides of said grooves,

      a first active region surrounded by said grooves and disposed on a first part of said main surface of said semiconductor substrate,

10       a first field effect transistor having a first gate oxide film formed on a main surface of said first active region,

      a second active region surrounded by said grooves and disposed on a second part on said main surface of  
15       said semiconductor substrate, and

      a second field effect transistor having a second gate oxide film, having a thickness different from that of said first gate oxide film, formed on a main surface on said second active region, wherein

20       an end shape of said second active region is the same as that of said first active region.

2. The semiconductor device according to Claim 1, wherein

      the widths of said grooves surrounding said first  
25       active region and said second active region are equal;  
      and

      the heights of these grooves from bottom surfaces to

surfaces of said silicon oxide films are equal.

3. The semiconductor device according to Claim 1 further comprising:

an inter-layer insulating film formed on a surface  
5 of said first field effect transistor and having an  
opening reachable to said first field effect transistor,  
and

a capacitor connected to said first field effect  
transistor through said opening, wherein

10 the thickness of the first gate oxide film is larger  
than the thickness of said second gate oxide film.

4. The semiconductor device according to Claim 2 further comprising:

an inter-layer insulating film formed on a surface  
15 of said first field effect transistor and having an  
opening reachable to said first field effect transistor,  
and

a capacitor connected to said first field effect  
transistor through said opening, wherein

20 the thickness of the first gate oxide film is larger  
than the thickness of said second gate oxide film.

5. A method of manufacturing a semiconductor device  
comprising steps of:

forming grooves surrounding first and second active  
25 regions disposed on a main surface of a semiconductor  
substrate,

forming a first silicon oxide film embedded in said

grooves,

forming a second silicon oxide film covering said first and second active regions,

forming a first mask having an opening corresponding  
5 to said first active region on a surface of said second silicon oxide film and etching said second silicon oxide film,

forming a first gate oxide film on said main surface of said first active region,

10 removing said first mask,

forming a second mask having an opening corresponding to said second active region and etching said second silicon oxide film,

removing said second mask,

15 forming a second gate oxide film on main surfaces of said first and second active regions, and

forming a first field effect transistor and a second field effect transistor respectively on said main surfaces of said first and second active regions.

20 6. The method of manufacturing the semiconductor device according to Claim 5, wherein

said first mask is a polycrystalline film.

7. The method of manufacturing the semiconductor device according to Claim 5, further comprising steps of:

25 forming an inter-layer insulating film,

forming an opening in said inter-layer insulating film reachable to said first field effect transistor,

forming a capacitor reachable to said first field effect transistor through said opening.

8. The method of manufacturing the semiconductor device according to Claim 6, further comprising steps of:

- 5       forming an inter-layer insulating film,  
          forming an opening in said inter-layer insulating film reachable to said first field effect transistor,  
          forming a capacitor reachable to said first field effect transistor through said opening.

10   9. The method of manufacturing the semiconductor device according to Claim 7, further comprising steps of:

- injecting a channel of said first field effect transistor into said first active region after forming said first mask and before etching said second silicon  
15   oxide film on said main surface of said first active region, and

- injecting a channel of said second field effect transistor into said second active region after forming said second mask and before etching said second silicon  
20   oxide film on said main surface of said second active region.

10. The method of manufacturing the semiconductor device according to Claim 8, further comprising steps of:

- injecting a channel of said first field effect  
25   transistor into said first active region after forming said first mask and before etching said second silicon oxide film on said main surface of said first active

region, and

injecting a channel of said second field effect  
transistor into said second active region after forming  
said second mask and before etching said second silicon  
5 oxide film on said main surface of said second active  
region.